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SEX AND LIFE:

THE PHYSIOLOGY AND HYGIENE OF THE SEXUAL ORGANIZATION.

BY

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"This sublime vision comes to the pure and simple soul in a clean and chaste body."

—*Emerson.*

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INTRODUCTION.

LIFE is the supreme thing; health and vigor are its full and happy expression. To know one's self and to conform to the vital laws which control personal existence and well-being, is the part of prudence and wisdom. Ignorance is always a source of danger; blind experience is an extremely unsatisfactory leader; carelessness is reckless and treacherous; the violation of the laws of life, whether willful or not, is fatal alike to the innocent and the foolish.

In the realm of life, there is no escape from the hurtful results of evil acts; no atonement is to be found for vital sins. To the transgressor nature is relentless and pitiless, neither forgetting nor forgiving an injury: who violates must suffer. It is no less true that conformity to the behests of life increases life: to him who has, and who rightly uses, more and more abundant life is given. Health flushes the cheek of him who lives well, nerves his arm with strength, endows his brain and soul with force, fills his daily

cup with refreshing cheerfulness and vigor. Who obeys, receives new gifts.

No other feature of one's organism is more deeply vital, none more impressive in its influence upon the vigor, health and happiness of the individual, than is the reproductive function, the sexual part. Yet no other organs, it would seem, are more often shamefully abused; about no other part is there, usually, such gross ignorance. Comparatively few of those who are otherwise intelligent and prudent live wisely in their sexual life. Unfortunately, an unwarranted prudishness restricts the freedom of instruction in regard to the sexual element in life. So forcible is this reserve that parents generally ignore the instruction of their children respecting the sexual nature. Sons grow to young manhood and daughters enter womanhood in ignorance of the purpose and proper care of their sexual parts, excepting as they learn about sex and the sexual organs in chance and uncertain way from their own unguided feelings and observations, or from such doubtful sources of information as servants and evil-minded companions. Thus it is that parents, who are anxious and earnest for the greatest welfare of their children, permit a false idea of

modesty to blind them to some of the simple and most vital needs in the education of the young beings intrusted to their care and dependent upon them for intelligent guidance.

As good health is the choicest of all blessings and the most urgent need of the individual in the stirring affairs of life; as virtue and chastity are the most sacred of all moral attributes, it would seem that the tender boy who is soon to become a man, and the delicate girl who is early to enter into the wonders of womanhood, should be well informed about sex, so that these offspring of the home, the hopes of the future, may escape the misfortunes of misplaced confidence, of accident, of ignorance and of blind impulse.

Let the young man endow himself with that definite information of his own being which shall help to form a proper basis for correct judgment, for self-control, and for manly and upright conduct; let the young woman know fully and forcibly the peculiar character of her feminine nature, that she may cherish her virtue as the rarest jewel of her crown, and appreciate both the blessings and dangers that attend her sexual life. There is no safety for either man or woman save in definite information, and this can be acquired

only by a careful consideration of what has been ascertained to be true in human experience.

In the following brief treatise, the author has attempted to give a concise view of sex, and the purpose of each sex in the reproduction of offspring. Sufficiently detailed descriptions are here given of the sexual organization of the human being, both male and female, to enable the reader to understand clearly the structure, use and care of these parts. The circumstances attending conception, pregnancy and childbirth are presented in order that these interesting and most highly important conditions of the mother may receive that enlightened attention which their peculiar nature deserves. Something, too, is given in regard to conjugal love and marriage, as these are indissolubly connected with the sexual life of the individual. The darker phases of sexual abuse are shown as a warning against these desperate pitfalls, and to guide the reader into the fairer and happier fields of self-control, temperance and faithful love.

Such subject-matter has been placed before the reader as occurs to the mind and heart of an earnest and honest parent in his zealous desire to properly inform the sons and daughters of his

own home and prepare them for honorable and successful careers as men and women. May these promising branches of the household not go astray through ill-judgment or uncontrolled passion in their intimate association with others; may they, by conformity to the right purposes of life's privileges and duties, escape the fatal consequences which attend the transgression of vital laws; may they never, by word or deed, mislead a companion, or place a stumbling-block in the way of a fellow-being, is the sole desire of their father in placing these lessons in their hands.

If the reader supposes that what is here given is immodest in its character, let him stop here and consider the fact that uncleanness, if there be any, comes only from his own weakness and impurity of thought. To the scholar, the physician, the teacher, the intelligent parent and the earnest young man or woman who desires to learn some of the lessons which lie deepest in life, whose aim is virtue, and whose thought is above suspicion, there will be nothing unchaste in what follows. For the unclean in mind these pages were not written.

OFFSPRING.

EVERY living thing begins its career in life as a cell which forms a part of the parent's body. After a season of preparation, during which time it remains attached to its mother, the embryo which has been formed from the original cell is separated from her and begins its existence as an individual living being.

The character of the offspring is determined so definitely by its parentage, that, during its whole life, it must remain like its parent in many important respects. This natural likeness of the offspring to the body which produces it preserves the various kinds or species of creatures among living things. There is no vital law more universal and unchangeable than this law of transmission of sameness of kind, which governs the nature of offspring and perpetuates the various types of vital existence.

The reason why the young being is of the same kind as its parent is simply because the embryo is a portion of the mother's body; hence, as it

grows, it remains the same in kind, and must ever continue to be like the original body from which, as a part, it was derived. Any familiar class of living beings will furnish illustrations of the truth of this law. Thus a grain of Indian corn is formed by the parent plant as a part of itself; when this grain is ripe and is planted, it grows, and, in growing, must produce a plant like the parent corn plant: it cannot become wheat, nor can it be oats. The egg of the goose is formed by the mother bird from a part of herself; when this egg is hatched, the young bird is necessarily a goose; it cannot be a robin, nor is it possible for it to be an eagle. The calf, born of the common cow, is formed by the mother from a part of herself; when it is separated from her by birth, it must be of the cow kind; it cannot be a deer, nor can it be a bear. So, also, the child of human parents is formed by its mother from a portion of herself and must be a human being like her; it cannot be anything else.

All living things die. There is nothing more certain than that every plant and every animal which has fulfilled its allotted season of life must disappear by death. Individuals perish, yet the race or species is continued by the origin and

life of other individuals of the same kind. These new things take the place of such as die, and, in turn, produce others like themselves, and then pass away by death.

In the world of plants, the reproduction or succession of individuals is accomplished chiefly by the formation and growth of seeds. Each seed is made by a parent plant, and contains within itself some nourishment together with a living germ. This germ is really a tiny plant, ready to begin to grow as a separate plant under suitable conditions for such growth. Thus, if the seed is properly planted in the soil, the moisture and warmth of the earth cause the embryo within the seed to begin to grow. All plants which produce seeds have certain parts of themselves which perform this important duty. These parts are the flowers which the plant bears, often so noticeable for their sweetness and beauty. The showy portions of the flower soon drop away, but a part, called the pistil, still clings to the parent stem and perfects the seeds. The stamens and pistils of the flowers are properly called the organs of reproduction of the plant, for they are designed to make the seeds which are the plant's offspring. These parts of the flower are to the

plant what the sexual organs are to animals.

In many ways the lowest kinds of animals resemble plants, and the reproduction of such animals is often as simple as the formation of seeds and buds by plants. In some of the very lowest kinds, the adult or fully grown animal simply divides itself into separate parts, and each of these portions becomes a new individual which grows to maturity, to be divided again and again into new and distinct individuals. In other cases among the lower animals, the young are derived from the parent bodies as new buds and bulbs are formed by some kinds of plants. These "buds," on being separated from the mother animal, grow as distinct individuals, or, it may be, they remain attached to the parent stock and grow as branches do upon trees, thus forming a cluster or colony of animals. Such animals are little more than plants, and are wanting in all of those distinctive features of animated bodies which distinguish the higher animals from the other forms of creation.

In animals such as fishes and birds, with few exceptions, the female forms eggs within herself, which correspond precisely to the seeds formed by plants. An egg, like a seed, contains a living germ, the same in kind as its parent, and, also,

nourishment for the early growth of this germ or embryo. During the process of hatching a bird's egg, the embryo within the egg becomes a young bird, which breaks from the shell at the appointed time, quite able to begin life on its own account.

In animals of the highest orders, among which the human being is included, the egg is retained within the mother's body until the young animal is ready to be born alive, after which it is nourished for a brief season by the mother's milk. All such animals are called mammals because they nurse their young, and the mother is called the mamma.

The human being is not unlike the other mammals in these respects, excepting that the human offspring is less strong after birth and needs the attention of its mother for a much longer time before it is able to care for itself in the world. However greatly man may excel the brute in mental and moral endowment, the human being is not otherwise an exception in the animal world, but is like other mammals in all essential respects, subject to the same laws of life, health, development and reproduction.

SEX.

AS has been stated, the offspring is derived from its parents and is designed to continue the species, or kind of being, to which it belongs. Thus a living being produces other living beings; out of life, life comes. This act of a living being in producing from itself a living offspring is what is meant by sexual function, and the parts of the body engaged in performing this important and wonderful process are the sexual organs.

In all the higher classes of animals, and in most of the plants as well, the production of offspring requires the action of two sets of sexual organs, the one female, the other male. Neither set is capable of acting alone: each set must contribute its share in forming the germ or embryo which finally becomes the new individual. In all the highest kinds of animals, these different sexual organs, when fully developed, are in different individuals, so that two individuals, one male, the other female, are really the parents of every

offspring. The male is called the father, or papa; the female is known as the mother, or mamma.

The difference between the father and mother is what is meant by sex. She from whose body the young being is born is the mother; she is female; she possesses the female sexual organs; she furnishes the original cell which becomes the embryo, and she nourishes this embryo as a part of herself until it is ready to begin life as a separate animal. The father, or male, furnishes a cell from his sexual organs, which cell is at once separated from him and is put into the cell within the mother's body, so that the original cell of the mother becomes a double thing, being now a part of herself and containing a portion of the father. After contributing this germinal element to the female, the male has nothing more to do in forming the young being. He is the father, however; he is male; he possesses the male sexual organs. Both are truly the parents of the offspring, and, as its growth is made from two parts, one from each of them, the new being is not an exact repetition of either parent, but is like them both. While the offspring may show more marks of resemblance to the one or the

other, it necessarily has the character of both parents blended in its own.

It would seem that the mother does much more toward producing the offspring than the father does. This is true. She does vastly more in developing the embryo by the nourishment which she furnishes to it from her own blood, and by the impressions which her mental conditions make upon the sensitive organism of the offspring while it is yet a part of herself. But the thing which she is thus developing — the original cell which becomes the embryo — is so surely a combination of both parents, and the embryo formed from it is also so certainly a growth of both these elements in one, that the father's characteristics are retained and grow just as do those of the mother, and are quite as fully shown in the offspring as hers. Thus a child having a negro mother and a white father would be neither negro like its mother nor white like its father, but would combine in itself, both physically and mentally, the marks of each in about an equal degree of prominence.

THE SEX OF PLANTS.

"Flower in the crannied wall,
I pluck you out of the crannies,
Hold you here, root and all, in my hand,
Little flower; but could I understand
What you are, root and all, and all in all,
I should know what God and man is."

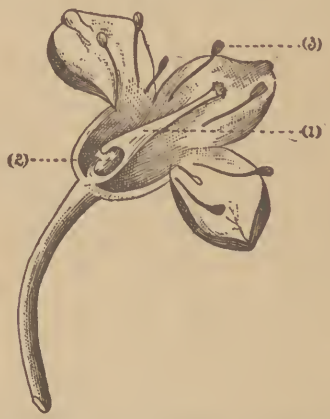
—*Tennyson.*

THE sexual organs of plants are usually more easily seen and understood than are those of animals. For this reason it may be well to examine their arrangement and learn their action

CHERRY BLOSSOMS.

FIG. 1.—A cluster of cherry blossoms: the sexual organs of the tree; both stamens and pistils in each flower.

upon one another in producing the seeds by which new plants are derived. A cluster of common cherry blossoms will serve for the purpose (Fig. 1). In the interior of any one of these blossoms there is a circle of small club-like parts called stamens (Fig. 2). Each stamen consists of a



THE PARTS OF A CHERRY BLOSSOM.

Fig. 2.—A section through a single flower: (1) pistil, (2) ovule, (3) stamen.

slender stem below, at the upper end of which stem there is a tiny bag or cavity, filled, when ripe, with a yellowish dust. When the stem is thoroughly ripened, this bag bursts open, and the dust from within is scattered about the stamen,

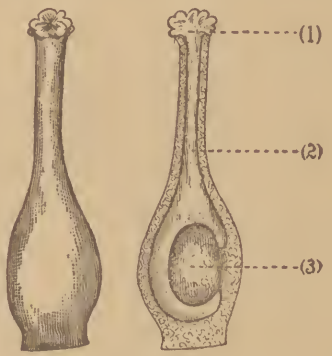
and may be borne many feet away by the wind. This dust from the stamen is called pollen (Fig. 3). Although the pollen seems to be only a kind

POLLEN FALLING FROM THE STAMEN.

Fig. 3.—The stamen, or male organ, which produces the pollen cells.

of dust, it is true that every grain of this dust is a living cell from the stamen, and, while yet alive, it may drop upon the open mouth of a pistil to aid in making a seed. These stamens are the male organs of the flower, and the pollen cells are designed to act upon the cells contained within the female organs.

Just within the circle of stamens (Fig. 2), and occupying the center of the blossom, is the part known as the pistil. This is the female organ. The pistil has a large, full part at the lower end, called the ovary, inside of which are the ovules or cells which are to become the seeds (Fig. 4). A tube leads up from the ovary and opens at the



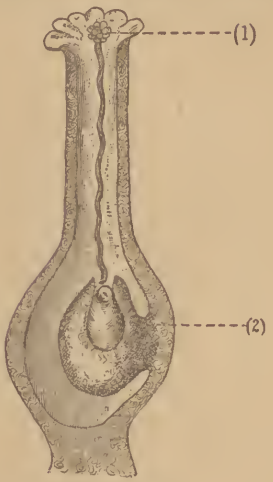
THE PISTIL.

Fig. 4.—The pistil, or female organ, which produces the seed; (*a*) external view; (*b*) a section, (1) the open mouth of the tube, (2) the passage to the ovary which contains (3) the ovule.

outer end as a kind of tiny mouth, the lips of which are wet with a dewy moisture.

Both the stamens, as male organs, and the pistils, as female organs, help in forming the embryo

in the seeds.* Thus a live grain of pollen from



FERTILIZATION.

FIG. 5.—A diagram to illustrate fertilization: (1) a grain of pollen sends a rootlet to (2) the ovule, which causes the latter to contain an embryo. This corresponds to conception in animals.

the stamens must fall on the wet lips of the pis-

* In some kinds of plants, the flowers containing the stamens are on separate plants from those which contain the pistils. Such a plant as bears only stamens in its flowers is called staminate. It is really a male plant, and cannot bear fruit. The plant whose flowers bear pistils only, is called pistilate. It is a female plant. It can bear fruit provided the pollen comes to it from some male plant of its kind. In some kinds of plants, the stamens and pistils are in separate flowers, with both kinds of flowers upon the same plant. In most cases, however, each flower contains both stamens and pistils.

til, and, by growing there for a brief season, send its tiny rootlet down into the ovary to the tender ovules there inclosed (Fig. 5). If, now, the rootlet of the pollen cell deposits a part of itself within one of the ovules, the latter will form a seed and con-

SEEDS IN A RIPE PISTIL.

Fig. 6.—A ripened pistil of the bean bursting open to permit the seeds to escape. This corresponds to birth in animals.

tain an embryo which will grow to be a plant. But if this does not occur, the ovule cannot become a seed. This action of the pollen cell on the ovules is called fertilization. After fertilization

THE PLANTLET.

Fig. 7.—An oak beginning to grow from the acorn. This corresponds to infant animal life.

is performed, the stamens can do no more toward forming the seeds; they wither away. But the pistils, with their precious contents, remain fastened to the stem and are nourished by the plant until the seeds within the pistils are ripe and perfect (Fig. 6). The ripened pistil is the fruit of the plant. If a seed from the ripe pistil is properly planted, the embryo within grows and begins to form a new plant like the parent plants. Figure 7 shows a seed that has begun to grow.

This is, in brief, the action of the sexual organs of plants upon one another in reproduction.

THE SEX OF ANIMALS.

THE sexual organs of animals are, usually, less easily examined than are those of plants, for they are often quite hidden within the animal's body. But the same general plan exists in animals as in plants. In any case, the organs of the male are so constructed that they supply sperm-cells for fertilizing or impregnating the germ-cells of the female. These cells from the male are to be compared with the pollen cells of stamens, except that they come off from the male in a kind of liquid called semen, which the male puts into the organs of the female. The wind cannot carry this fluid, as it does the pollen dust, so that it is necessary for the organs of the male animal to enter the organs of the female, or to come into close contact with them, in order that the semen may reach the cells of the female.*

These living cells, sperms as they are called

* This is not true of fishes, however. The spawn and milt from the female and male fishes are thrown into the water by each, and the two kinds of germs meet in the water, outside of and away from the bodies of both parents.

by some writers, from the male animal, have a long name. They are called spermatozoa. They, like the pollen, are simply living cells thrown off from the father, and are a necessary part in forming the beginning of the embryo that becomes the offspring.*

The female organs are to be compared with the pistils of the flower. They are open to receive the male organs, or, at least, to receive the semen. These female organs contain, at some place within themselves, the ovaries which have in them the cells, or ova (eggs), that are to become embryos. The spermatozoa must find their way to these cells of the ovary, and, by entering them, furnish the element from the father that aids in forming the embryo. This is the purpose of sexual intercourse.

With this brief statement of the sexual relations of animals in general, this portion of the text closes. The remaining part treats particularly of the sexual organization of the human be-

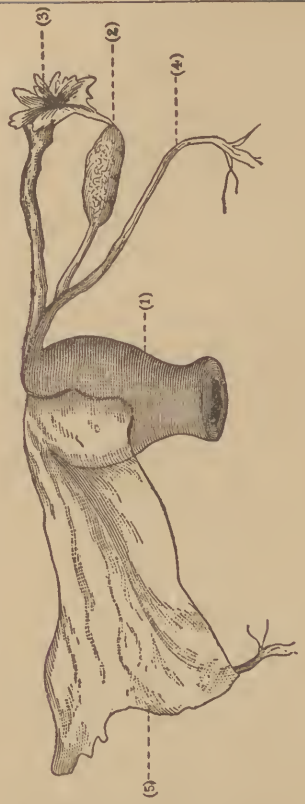
* The spermatozoa are extremely minute cells, usually not exceeding 1-600 of an inch in length. Each cell has an enlarged triangular portion, to which there is attached a fine hair-like part. By its wave-like motion, the cell has the appearance of some kinds of animalcules. It is, however, simply a cell, having a kind of motion common to many other forms of germinal matter, both vegetable and animal.

ing, both male and female.

It is supposed by the author that the reader has, at least, learned the ordinary facts of human anatomy, physiology and hygiene, as they are presented in the elementary text-books of the common schools; hence, all details of the structure and use of the other parts of the body are omitted here.

THE SEXUAL ORGANS OF THE HUMAN BEING.

THE sexual organs of the female occupy the front lower portion of the abdomen and the central part of the pelvic cavity. The colon passes behind these organs, while the bladder is placed in front of them. The principal divisions of this set of organs are the vagina, the uterus, the ovaries, and Fallopian tubes (Fig. 8). The vagina is a soft, muscular tube, more than an inch in diameter, and four or more inches in length. It opens out of the body through the vulva, which forms a mouth for it. At the outermost part of the vagina, a tube from the bladder also opens into the vulva. The innermost part of the vagina is connected with the uterus, for which cavity the vagina forms a passage-way. The walls or sides of the vagina rest against each other, closing the passage, except as they are pressed apart by the presence of something in the vagina; the walls are formed chiefly of muscle and are lined with mucous membrane.



THE FEMALE SEXUAL ORGANS.

FIG. 8—A diagram of the sexual organs of a woman, about one-third the natural size: (1) the uterus, (2) an ovary, (3) a Fallopian tube, (4) round ligament, (5) broad ligament which, on the opposite side, has been cut away to show the parts it supports.

The uterus is a hollow, muscular body about one-third as large as the closed fist, and has the shape of a flattened pear. It is above the vagina, with the tapering portion pointing downward and backward, and extending into the upper part of the vagina. The walls of the uterus are thick and strong. The cavity within is small and flat, somewhat triangular in form, and is lined with delicate mucous membrane. The neck of the uterus is about as large around as the thumb, and the opening through this portion into the interior of the uterus is not much greater in size than a common goose-quill. The main cavity of the uterus is connected with the ovaries, one on each side, by means of minute tubes called the Fallopian tubes. The uterus is the part in which conception occurs and in which the child is formed. Although so small at first, if conception occurs the uterus increases in size to accommodate the growth of the child within, and, after the birth of the offspring, the uterus returns to its former size again. The uterus is supplied with a vast number of blood-vessels, so that during pregnancy the young child receives its nourishment from the mother's blood through the blood-vessels that fill the lining membrane of the uterus.

The ovaries are two in number, one on each side of the uterus, at a distance of three or four inches away. This places an ovary in each side of the abdomen near the groin. They are joined with the outside of the uterus by broad ligaments which aid in holding both them and the uterus in position, and they are also connected with the interior of the uterus by means of the Fallopian tubes. Each ovary is a roundish, flattened body, about an inch and half in length, less than an inch in width, and about half an inch in thickness. The ovaries are the peculiar and important division of the sexual organs of the female; in them are formed the germ cells from which offspring is formed. On close examination, each ovary is found to produce and to contain a great number of cells or vesicles. These are really minute ova (eggs), called the Graafian vesicles. Each of these vesicles is composed of a sac or covering, within which is a germinal or embryonic cell (Fig. 9). The larger of these vesicles vary in number from ten to twenty, and in size from that of a grain of mustard-seed to that of a pea, while there are great numbers of still smaller and less mature ova in the mass of the ovary.

At the time of each monthly period a large, ripe Graafian vessel bursts, and the ovum thus set free from the ovary makes its way through the Fallopian tubes into the uterus; this ovum is retained in the tube and in the cavity of the uterus for several days, during which time it may become

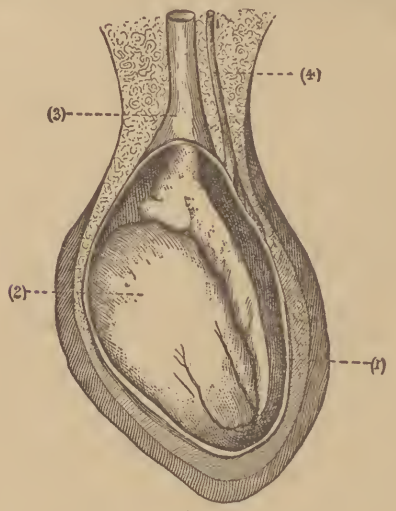
THE OVUM.

Fig. 9.—A diagram of the human ovum greatly enlarged: (*a*) the Graafian vessel enclosing the ovum; (*b*) the free ovum escaping and ready for impregnation.

impregnated and form an embryo in the uterus. If not impregnated, it passes out with the menstrual flow, or is destroyed and absorbed.

The Fallopian tubes are two slender tubes which extend from the upper portion of each side of the uterus to the ovaries. The outer ends of these tubes are singularly fringed and made to connect with each ovary in such a way that the ova from the ovary may pass through these tubes into the uterus.

The male sexual organs are somewhat more simple and are more nearly external than are those of the female. They consist of the testicles with

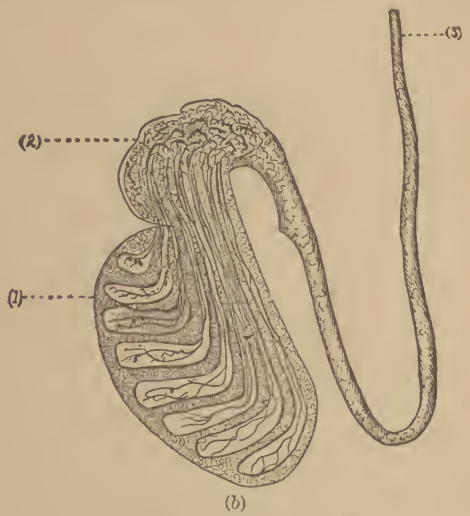


THE MALE SEXUAL ORGANS.

Fig. 10.—Diagram of male sexual organs.
(*a*)—The testicle, natural size, scrotum partially cut away: (1) cut edge of the scrotum, (2) body of testicle, (3) spermatic cord, (4) spermatic artery

their tubes and the penis with its glands (Fig. 10). These testicles are the peculiar and important sexual organs of the male, for it is their purpose to produce the spermatozoa, or sperm-cells. The

testicles are two in number. They are firm, oval glands, about the size, and somewhat the shape, of small hen-eggs. They are suspended from the lower front portion of the body and are inclosed



(*b*)

THE MALE SEXUAL ORGANS.

FIG. 10.—Diagram of male sexual organs.
(*b*)—A section through the testicle: (1) network of seminal tubes within the testicle; (2) union of seminal tubes; (2) duct leading to seminal sacs.

by the scrotum. The interior of the testicle is a delicate and complicated glandular structure. From each testicle there is a minute tube extend-

ing from the inner portion of the testicle, through the spermatic cord, to the seminal sacs, which form minute reservoirs just below and behind the bladder. The seminal sacs are connected by tubes with the urethra of the penis.

The spermatozoa grow in the delicate structure of which the interior of the testicle is formed, and, when they mature, they become detached and

THE MALE SEXUAL ORGANS.

FIG. 10.—Diagram of male sexual organs.
(*c*)—The spermatozoa, greatly enlarged: (1, 2, 3) different stages of development of the sperm cells within their sacs; (4, 5) different views of the free cells.

make their way through the winding tube which conveys them to the seminal sacs. Here they collect in great numbers, ready to be thrown out through the penis in time of sexual intercourse.

The penis extends from the body just above the scrotum. It is an inch or more in diameter and five or more inches in length. Through the penis

extends a tube called the urethra, which, by its internal connections, forms an outlet for the urine from the bladder and the semen from the seminal sacs.

The semen is a thin, milk-like fluid, supplied in part from the testicles and in part from the glands about the neck of the bladder and elsewhere upon the penis. The spermatozoa mingle with the semen and are carried by it.

PUBERTY.

"If you neglect the education of your daughters, you are preparing shame for your own family, and unhappiness for the houses into which they may enter."

—*Chinese Doctrine.*

THE child at time of its birth is extremely delicate and immature in all of its parts. The bones are not hard, the teeth are yet beneath the gums, the muscles are pale and soft, the skull is only partially formed, and the brain and spinal cord are little more than a mass of sensitive jelly. Many years must pass during which the parts are to grow in size and strength before the child becomes an adult or fully formed person. This necessary development pertains to the sexual organs as well as to the brain or other parts. Girls develop somewhat more rapidly than boys, so that the girl becomes a woman at an earlier age than a boy becomes a man.

The progress from infancy, through girlhood to womanhood, is a gradual one, yet a very decided change occurs about the twelfth year of the girl's life. This is the change which decides her puberty or indicates such a development of her sex-

ual organs as to make her capable of bearing children. It is at this time that the mammary glands of the girl become enlarged and the ovaries begin to develop the ova regularly each month. The bursting of the ripened ovum in an ovary every twenty-eight days is called the "monthly period" of the woman, and she is said to menstruate. At the time of menstruation, there is more or less griping pain in the region of the ovaries, and a flow of mucus and blood from the lining membrane of the uterus. This flow is a real hemorrhage, and, though it occurs from natural causes and should produce no alarm, it is not a trifling matter. During the time of this menstrual discharge, the female should take extra care of herself; she should not work hard, nor exercise excessively; she should not become greatly excited in any manner; she should avoid getting wet or taking cold; if possible to do so, she should take only moderate exercise and otherwise remain quiet and wait until the flow ceases. Usually it continues from two to five days. From the time the ovum is ruptured in the ovary, which occurrence brings on menstruation, until five or six days after the monthly period closes, the ovum is likely to be present in the uterus or

Fallopian tubes, and, for this reason, conception occurs most frequently at or near the time of the menstrual flow of the female. This monthly act of the ovaries in producing ova ceases temporarily during pregnancy, and stops wholly as the woman reaches the age of forty-five or fifty years.

The boy passes gradually and somewhat more slowly from boyhood to manhood, and has at no time such decided change as that just described as occurring with the girl. But, at the age of fourteen, or later, his countenance begins to lose its boyish cast, his beard commences its growth, his shoulders broaden, his chest increases in capacity, his voice becomes more masculine, and his sexual organs become more active. At this time the testicles begin to form spermatozoa, and he might now be the father of a child. This is his season of puberty.

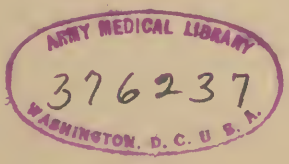
These changes which occur in the sexual functions at puberty are very marked, also, in their influence upon the mind of the person; in fact, the individual is passing through a season of change and uncertainty, in which the foundations of the whole organism are being reconstructed. Both the boy and the girl are unusually sensitive at this time: the boy is more easily embarrassed,

he is restless and unsatisfied; the girl is more sentimental. Both ought to receive the kindest of treatment and the exercise of the greatest of patience from parents and teachers. Both find themselves possessed of new and strange powers. Both are disposed to erratic behavior; they are liable to go astray in conduct and to commit fatal mistakes.

Any excitement of the sexual organs before puberty cannot be other than extremely harmful, and any excitement of them during this season of change is equally unwise.

Although puberty is passed at the early age of twelve and fourteen, neither the girl nor boy gains full growth and maturity of parts until twenty or more years of age. Before the young woman has fully completed her own development, she ought not to become the mother of a child. The bearing of offspring is not childish sport, but is the most serious and most responsible function of the strong and mature woman. To bear a vigorous child, without injury to herself, and to care for it properly afterward, will tax all of her powers, of both mind and body, to the fullest extent, even under the most favorable conditions. Undoubtedly, therefore, the young man and

woman will be prudent if they delay any possibility of becoming parents until the complete development of twenty or more years shall have prepared them for this great and sacred responsibility.



SEXUAL PASSION.

"Seeing either sex alone
Is half itself, and in true marriage lies
Nor equal, nor unequal: each fulfills
Defect in each, and always thought in thought,
Purpose in purpose, will in will, they grow,
The single pure and perfect animal,
The two-cell'd heart beating, with one full stroke,
Life."

—*Tennyson.*

SINCE the continuance of the race is dependent upon the production of offspring, both sexes are impelled to such acts of intercourse as will cause this result. As a fact, this tendency exists between the sexes both as an instinctive impulse and as an ardent desire which forms one of the strongest of animal appetites. So strong is this passion for sexual intercourse that it will, under some circumstances, overpower all other desires, and, temporarily, become the dominant motive of the person. Unless this tendency to indulgence is guided by intelligence and controlled by a firm moral nature, there is danger that this consuming appetite will lead the person into evil practices upon his own person, cause him to seek unwarranted means of gratification, or draw him

into lewd associations and into licentious habits.

Every natural appetite is doubtless for a good purpose, if it is rightly understood and properly used, but the lustful gratification of it is surely depraving. Thus, hunger for food is innocent and right in its purposes, yet gluttony in eating is hurtful and shameful. By yielding to the indulgence of any appetite, the habit of gratifying it is easily and firmly riveted upon the individual — a habit "whose chains are too light to be felt until they are too strong to be broken."

No other appetite binds its victims down more despotically by their yielding to its impulses, than does the sexual passion bind down to depravity the man or woman who gives it unbridled sway. Only by moderation, restraint, or reasonable control and avoidance of its temptations, may it be kept from producing disastrous dissipation.

Each sex finds in the other that which it demands and craves. Each man sees in the woman of his choice that which his strong sexual powers make him want; each woman finds in the embraces of a man who suits her what her deep sexual nature compels her to desire. Nature has made each for the other. Neither, alone, is perfect. If they are mutually agreeable, they are

drawn toward each other with impulses that form the strongest of attractions, bonds for which they will surrender all other ties of affection. This craving which they have for each other, and the relief which each can give the other in sexual intercourse, is as natural and as universal as the hunger for food. Herein is the great danger that is connected with this passion of their inmost nature; for, though it is a demand of their nature, impelling them with great force, it is not an appetite whose requirements are to be gratified simply for the pleasure of the indulgence, but it is a powerful impulse of their being, which is to be controlled and used under the wisest judgment that can be brought to bear upon it. Health, strength, vigor, beauty, refinement, all lie in the direction of its control and rightful use, while pain, weakness, illness and grossness follow in the way of its immoderate and unlicensed sway.

CONCEPTION AND GESTATION.

THE union of the ovum of the female and the spermatozoa of the male produces what is known as conception. This union is the beginning of a new life.

The ovum thus impregnated is arrested and retained in the cavity of the uterus. Here it is to remain and develop until the offspring therefrom is ready to be born. The outer surface of the embryo becomes intimately attached to the delicate lining of the uterus so that the blood of the mother circulates through the young being. Thus it is nourished and protected by the portions of her body which have been specially designed for the performance of this wonderful and beautiful work of the mother. She is truly an artist, creating and perfecting a living being—a human soul.

Whether conception occurs unintentionally from careless intercourse, whether it is the result of lustful indulgence, or comes as a blessing in answer to the intention and desire of its parents

for offspring, the consequences are the same — a new life is begun at the time of conception. Though this new being is, as yet, a part of its mother's very life, and is dependent absolutely on her blood for its nourishment and upon her protection for its continued existence; though it is only an embryo, wholly unconscious of its own life and destiny, nature regards it as a new being started upon its career. To destroy it is to kill the life of an individual. Its life is sacred in its mother's care. Its parents, male and female, cannot escape the responsibility of their act in bringing it into existence. Upon them rests the duty of parents to protect, nourish and perfect this offspring of themselves — it is flesh of their flesh, and soul of their soul.

The embryo grows and forms every part of itself after the pattern furnished by its parents. This model it cannot alter. Its growth is governed by the same vital law which controls the development of all other living beings, which law decides that every cell of every living thing must form itself like its parent cell, modified only by its peculiar surroundings and the use that it is to serve. The cells of which living matter is composed have the tendency to shape themselves, to

select the proper material from the circulatory fluid by which they are nourished, and to build themselves into the various structures that are needed in the organic arrangement of the vital body which they compose. A person does not give his thought to the formation of his own body: he could not form his parts if he would. A more unerring intelligence, an ever vigilant eye and a hand of infinite skill are at work with the cells that build the heart, the brain, the bones, the muscles, the eye and all the other organs. This formation and renewal of parts goes on at all times and in almost all parts of the living animal body. As old and useless portions waste away, new cells take their places and re-form the needed structure. This active formation of the new out of the old, this turning of dead substance into vital forms, this process of self-growing, self-shaping, self-renewing, is what distinguishes living substance from dead matter. This is as near to life itself as human knowledge may approach. What the real essence of life is, why and how the cells make and shape themselves, man does not know, nor is it probable that it will ever be within the province of his limited mind to know. Certain it is, however, that this capacity and ten-

dency for self-forming exists in the primitive cell from which the embryo is made. Through days and months, the cellular substance grows and shapes itself into the required organs of the new being; although so simple at first, it becomes more and more complex, and the various parts adjust themselves to one another according to their different positions, structures and uses, until the whole is completed.

During this interesting period, the mother is said to be pregnant, and the changes which the embryo undergoes are known as gestation. From the time conception occurs the forces of the mother's organism are in part turned toward the development of her offspring. She is now two beings. She has her own vital powers to sustain and the new life to develop. Menstruation temporarily ceases. The mammary glands (breasts) prepare for producing milk. The lining membrane of the uterus becomes especially active, and, by its increase in extent, becomes so wrinkled that it soon completely encloses the tiny ovum within its folds. By this means the embryo is no longer exposed in the open cavity of the uterus, but is lodged in a sac formed around it by the lining of the uterus. As the ovum de-

velops it requires nourishment; this it receives from the circulation of the blood in the mother's uterus. The outer membrane of the embryo becomes intimately joined with that which surrounds it, so that the mother's arterial blood brings it oxygen and building material, and her venous blood conveys away the waste products caused by its growth. From the cell (Fig. 9) of which the embryo at first consists, many other cells are formed.

This mass of increasing cells divides into collections of slightly different kinds of cells which form two membranes; one of these gives rise to a skin and forms the other parts of the body from which are developed the spinal column and brain, the skeleton and the extremities; the other forms an inner, mucous membrane from which the digestive organs and lungs are formed. Between these two membranes, a circulation is established, and the heart, arteries and veins are constructed. By the third month of gestation, the placenta is formed, by which more direct connection between the embryo and the mother's blood is established and a complete circulation is permitted through the organs of the young child. By the fifth month the beating of the fœtal heart can

be heard through the walls of the mother's abdomen, and the motions of the young being be felt as it struggles within her body. Thus the shaping and growing continue through every phase of development, until what was a single cell at first has become the perfect child, with all its parts complete and ready for birth. The full period of gestation in woman requires two hundred and eighty days.

THE MOTHER DURING PREGNANCY.

THE development of the fœtus requires that the uterus shall become enlarged accordingly. This occurs by the increase in extent of all its parts, especially in the enlargement of the body of the uterus, by which portion the young child is surrounded. The muscular fibers appear to increase in length and width, and also in number; the circulatory vessels enlarge; the nerves and other parts accommodate themselves to the gradual expansion of the structure. As the uterus and its contents become greater in size, the entire abdominal region of the mother becomes extended.

This season is one of deep import to the mother, for in it she is fulfilling one of the supreme functions of woman and is sustaining one of the greatest of human trials. Two lives are dependent upon the proper completion of gestation and the successful birth of the offspring. She deserves from herself and from those about her the exercise of the greatest good judgment in taking care of herself. She should eat moder-

ately of wholesome food, neither overtaxing her digestive organs by eating too much, nor permitting herself to lose strength from need of nourishment. Her best diet will consist of the grains, vegetables and fruits; especially should she eat liberally and regularly of the ripe fruits* in season, such as please her taste and agree with her digestion. A regular fruit-diet will do more than anything else can do to prevent and relieve constipation. If she will eat properly, she need not resort to the use of medicine. The pregnant woman is not necessarily a sick person because of her condition. She may be just as well and active during this period as at any other time of

*Some of the most healthy and beautiful children the author has known were born with but slight pain to the mother. In these cases the mothers ate almost exclusively of fruits and vegetables after the first two or three months of pregnancy. It is held to be true that while all the parts of the child will be formed as perfectly when the mother confines herself to a diet of fruits and vegetables as when she eats more abundantly of grains and meats, the bones of the growing child do not become so hard and firm, and hence birth is made much more easy for the mother. The author knew of one case in which a strong child weighing eight pounds was born of a very small mother with no pain during labor. There was the best of reason to believe that this very desirable result was due largely to the persistent fruit-diet of the mother during the last six months of her pregnancy. Such a course is worthy of attention and trial, especially by women who are delicate or who are under average size. Wheat is more rich in bone-hardening substance than the most of the other bread-making grains are; hence, while it is the best of foods under other circumstances, it is not the best for the mother who seeks an easy birth for her child.

her life. If she takes proper exercise, she will have sufficient appetite, and she need have no concern about not being able to eat enough; she will more often cause herself to be distressed from eating too much than from eating too little.

The pregnant mother should dress with proper regard to her condition. While she should clothe herself comfortably as respects temperature, she should relieve herself of heavy clothing as much as possible, and especially alter such garments as in the least degree bind her body closely. Loose, light clothing about the abdominal regions is absolutely needful for both her own relief and to permit the enlargement and changes of position that must occur in these parts. Not only should the clothing be loose, but all its weight should be suspended from the shoulders. To attempt to hide or hinder the natural increase in the abdomen by means of the corset or closely fitting dresses, is to invite other troubles of much more serious character. Any tightening of the region of the waist must press the increasing organs down into the lower part of the abdomen, thereby causing much more deformity and prominence of this portion, and also making additional pressure upon all the organs within the abdo-

men and pelvis. Such a course cannot fail to deform the body more and to cause weakness and pain in the back.

The mother in her child-bearing should take proper exercise daily. It is only by reasonable and regular exercise that she can maintain the vigor of all her parts. She may walk, ride, work. She should be much in the open air and sunlight. She should avoid idleness, cheerlessness, distress and despondency as she would shun contagion, for they cannot but contribute toward making her condition worse. There is no better exercise than that of regular, ordinary work and that of walking in the open air. Agreeable occupation, constant employment, busy cheerfulness, are the surest means of avoiding both mental and physical depression. She should not exercise excessively nor violently; she should avoid any sudden or heavy strain; she should avoid any great excitement; she should receive no sudden shock; she should be shielded from fright, anger or abuse, or from anything else that endangers her life. Any one who would do her the least violence, by word or deed, while she is in such a condition, is too brutal to be worthy to wear even the image of a human being.

ANTENATAL INFLUENCES AND HEREDITY.

* * * "Happy he
With such a mother! Faith in womankind
Beats with his blood, and trust in all things high
Comes easy to him; and tho' he trip and fall,
He shall not blind his soul with clay."
—*Tennyson*

HEALTHY and beautiful children do not come into life as matters of accident, nor in any way as a miraculous work of the Creator, but they do come as the necessary result of favorable conditions of parentage. The mother may be certain that during the months of her pregnancy she can do much toward producing these desirable results in her child. So closely is the life of the offspring connected with her own, so sensitive is its growing organism, both physically and mentally, to her influences and her conditions, that she exerts decided and lasting effects upon its appearance, its disposition and the foundation of its character. She is developing a new body, and in great measure she is bringing into being a new soul. The health and beauty of her life will, in some degree, take hold of her unborn child; her industry and energy will tend to affect it in like

manner; her cheerfulness will, in part, create its pleasant and agreeable disposition; her virtue, in all ways, will strengthen its innate tendencies toward rectitude. On the other hand, her evil thoughts, her weaknesses, her ill-temper, her petulancy, her selfishness, her despondency, her immoral ways of every kind will cast their fatal shadows upon the life of the child she is bearing. In extreme cases it may be that the tendency to murder will be inborn in the offspring, as a result of the mother's hatred toward its life while it is yet a part of her own. Let her understand that the child, in some degree, images her influence upon it for good or for evil during the period of gestation.*

* "Birth marks" or "mother marks" are blemishes which discolor or deform the child, caused by some peculiar excitement of the mother during pregnancy. The most common form of such mark is the red spot of skin on the face or other part of the body. Much worse cases occur, however, in which the child is deformed in shape, imperfect in its vocal apparatus or otherwise seriously marred. It may be that the injury to the child takes the form of physical disease, mania, mental weakness, or idiocy. These unfortunate results are frequently traceable to the effect of some special nervous influence of the mother upon the child during her pregnancy. Such may be the effects of sudden fright, shock, impression from hideous scenes, fear of brutal treatment, worry over domestic affairs, anxiety for some one in danger, morbid thought, anger, jealousy, any of which may affect the mother's imagination so forcibly as to injure the sensitive organism of the child she is bearing, tending to cause physical blemish and deformity, or mental weakness and idiocy.

There are tendencies, however, which are so strongly fixed by the transmission of deeply seated diseases from parents to their children, that these tendencies cannot be materially prevented by any course of influence that the mother may adopt to the contrary. In cases in which either or both of the parents have pulmonary consumption, or have a constitutional tendency to such disease, the disposition to the same peculiar weakness descends to the child with a degree of certainty which makes it almost impossible for even the best of conditions of healthfulness to prevent a fatal development of the malady in the child. In like manner, the tendency to insanity perpetuates itself through generations of offspring. In the same way, cancer, scrofula, syphilis and other loathsome diseases in parents bear their bitter fruits in the innocent children bred from such a source. Intemperate habits in the parent tend to beget the same unbridled appetite in the child; thus the acquired appetite of the father may become the inborn and much more fatal tendency in the child. Idiocy of offspring frequently appears as the heavy curse placed upon the children born of a drunken parent. The father may indulge in the use of tobacco or other

narcotic poisons with seemingly but slight injury to himself, but the poisonous effect is so decided in its weakening influence upon his nervous system that his child, whether boy or girl, will probably prove to be a nervous wreck, in some cases fit only for the hospital or asylum. Poison tends to kill not only the user thereof, but the seed from such a source. There can be no "moderate" use of any poison which does not incur the penalty of this law of heredity. So, too, licentiousness, in any of its forms, in the parent, must implant the same depraving tendencies in the child. There is no escape from the operations of the immutable laws of life, and heredity is one of these which is alike faithful in its results, whether its fruits be good or evil.

If, then, the mother would bear healthy and beautiful children, how absolutely necessary it must be that the germs she is developing shall come from a healthy and virtuous source. However excellent her own life, she cannot wholly change the evil tendencies which may be implanted in her offspring from a corrupt or diseased father. If she would have her offspring blessed with the choicest endowments of life, she must require of their father the health, chastity and

excellence that she desires to see belong to her child. Virtue will beget virtue, health will generate health, no more surely than evil will breed viciousness, crime perpetuate itself in the child and disease corrupt the life of the young being whose misfortune it is to be born of diseased parents.

CHILDBIRTH.

WHEN the process of gestation is completed, the uterus contracts forcibly upon its contents and presses the child out by way of the vagina. This is called labor. It is usually attended with much pain, and is a severe trial to the mother's strength and powers of endurance. The length of time required for labor depends upon various circumstances. Easy labor may be completed in thirty minutes, while in unfavorable cases it may require many hours. During this great strain the mother should be attended by a competent physician, for her suffering and the risk of life to herself and to her offspring are too great to be entrusted to unskilled hands. After the birth of the child, the uterus closes tightly upon itself and stops the hemorrhage from its interior surface. It now gradually returns to its condition as before pregnancy occurred.

The child, having been separated from its mother, begins to breathe, and its blood takes its proper course of circulation through the heart and lungs.

As already stated, to bear a healthy and vigorous child, and to care for it properly afterwards, taxes all the powers of the mature woman. Even under favorable conditions of health, size and strength, it is a great trial. If the mother is in good health; if she acts prudently during her pregnancy and meets no accident, she can pass through the trial and recover from it with no loss to her powers. It is much too great a strain, however, for a delicate woman to bear at any time, and it is too serious a burden to be frequently repeated even by the most vigorous. Carelessness and ill-judgment should have no part in deciding when this trial shall come upon the mother. Many a fair woman, many a delicate, devoted mother, surrenders her life by too frequent childbirth. The father and friends may wonder why she grows ill, becomes weak and dies, leaving the saddest of sad things — motherless children. The father would better exercise some intelligence and judgment in his intercourse with her, and restrain his sexual passion in a reasonable manner, than to sacrifice the health and life of the mother of his children.

After the birth of a child, many months are required for the mother to regain the condition

she maintained before pregnancy. Nature protects her for a season from the recurrence of conception, by suppressing her menstruation. Surely she should wholly recover her own strength before engaging in a new trial of her vital energies. The same good judgment of parents should regulate the coming of their children into the family that controls and adjusts any of the more ordinary affairs of the home and of business. If, however, ignorance and carelessness are to determine in matters of such great importance, then parents who intrust their vital interests to such doubtful keeping must expect to abide by the results of their indifference; there is no special providence by which the consequences of their ill-judgment will be altered; the favors of fortune appear rather to follow from the exercise of care, and to bless those who act wisely.

CONJUGAL LOVE.

"For woman is not undevelopt man,
But diverse: could we make her as the man,
Sweet love were slain: his dearest bond is this,
Not like to like, but like in differenee.
Yet in the long years liker must they grow;
The man be more of woman, she of man;
He gain in sweetness and in moral height,
Nor lose the wrestling thews that throw the world;
She mental breadth, nor fail in ehildward care;
Nor lose the childlike in the larger mind;
Until at last she set herself to man
Like perfeet music unto noble words;
And so these twain upon the skirts of Time
Sit side by side, full-summ'd in all their powers,
Dispensing harvest, sowing the To-be,
Self-reverent eaeh and revereneing eaeh,
Distinct in individualities,
But like eaeh other e'en as those who love.
Then eomes the statelier Eden baek to men:
Then reign the world's great bridals, ehaste and calm:
Then springs the crowning race of human kind.
May these things be!"

—*Tennyson.*

SO closely are the mind and body related, the one serving the other, each dependent upon the other, that it is impossible to regard intelligently the healthful condition of either without considering the connections and influences of the other. Undoubtedly, mental vigor depends very greatly,

in fact almost wholly, upon the healthy and vigorous condition of the body. Physical weakness tends to establish corresponding mental frailty. On the other hand, proper intellectual activity and a healthy condition and exercise of the feelings affect bodily functions favorably, while dissipation of mental energy, excitement of passion, mania of every description, disappointment and despondency, tend to destroy not only the inherent forces of the mind, but to engender corresponding physical weakness.

One of the emotions which affect the vital organism most profoundly and forcibly is what is known as conjugal love. This love is inseparable from sexual function. Nature has planted this intense feeling in the human being, in order that the race shall be continued, and with the proper fulfillment of its design she has coupled some of the most precious interests of individual welfare and happiness. In its ideal purpose, conjugal love would bind the man and woman into a unity of usefulness, in which each devotedly serves the other, and together they produce offspring whom they foster with parental affection and sacrifice. In this form, conjugal love is unselfish; it is beautiful and pure. This union of the male and

female into one household, by reason of their love for each other and for their children, is the basis on which the home is founded, on which the interests of the family rest, and of all things human it is one of the most sacred. So strong is this bond of conjugal love between persons who are mutually attractive, that they will break all other ties of affection for this deeper and stronger passion. It is not strange, therefore, when this energy of one's being is fortunate in what it meets and binds to itself, that such a happy union must tend to maintain the health and to elevate the life of the person, and that its sustaining power will illumine with some pleasure even the darkest pathways of life. Nor is it unnatural that to cross this passion, to disappoint its hopes, to blast its attachments, will tend to strain the very foundations of such an unfortunate life. There is no fiction in a "broken heart." So deeply seated may be the sorrow from disappointed love, that, in some cases, the affliction breaks the vital cord or unseats the reason.

Conjugal love properly leads toward civil marriage. In the pledge of personal devotion to each other, and of sacrifice for each other, which this bond of love establishes between man and woman,

is found the genuine link on which marriage rests. Unquestionably marriage is an act of extremely serious importance. It is a union for life, a union which carries with it the most intimate personal intercourse that is possible between two persons; it is a partnership in a home; it is the united parentage of children; it is a unity of career, and, to a great extent, the determination of a common destiny. It is a contract into which it is easy to step when opportunity offers, but from which it is most difficult to be released, however much the desire for separation. It is a bond within which it is extremely difficult to correct any of the mistakes made by haste in selecting a partner. It would certainly be wrong to base marriage wholly on sexual grounds, regardless of the fitness of the contracting parties for each other in other respects. The enduring happiness of the individuals and the permanent welfare of their union will rest almost wholly upon their congeniality of character. Hence it is that the disposition, the tastes, the aims, worth of character, soundness of health, correctness of habits, should all be thoroughly known of each by the other before marriage occurs, and the union be consummated in the full light of such knowledge. In

this connection let it be understood that the young woman has as great need to know and as much reason to demand that the man whom she is about to marry shall have the same personal tests of health, chastity and morality applied to himself, that he requires of her. With such fair and full understanding between the contracting parties before they enter marriage, there will be less of disappointment afterwards.

No civil contract, no human ordinance can in any way set aside or modify the operations of the laws that govern health or life; nor can it shield the violator of their decrees from the consequences of such infraction. Any excess or wrong, whether within wedlock or outside of it, must produce the same hurtful results. While marriage is a beautiful and wholesome institution of human enlightenment, it is not a recognized factor in the animal world to which mankind belongs. Simply because a woman and man are thus formally united is no license for their abuse of any vital function which the convenience of their close relationship renders easy. Excessive intercourse, and the unwilling and unwished-for yielding of the person of the woman to the sexual desires of the man, are just as destructive within marriage as illicit pros-

titution can be without the cloak of marital sanction. Rather than yield herself to painful intercourse or to the unbridled passion of her husband, she would better sacrifice her pledge, which such abuse from him has forfeited, and escape from what may prove to be her own destruction. From a sanitary point of view, a woman's life and health are vastly more sacred than her plighted service can be to a gross, selfish or brutal husband. Nothing can more surely blight the life of a delicate and refined woman than to submit excessively to unpleasant or painful sexual intercourse; nothing else can more deeply affect the nervous system; nothing else can more certainly arouse her repulsion and depress her vital forces. Even if the husband and wife are most affectionate, and their constant intercourse is mutually agreeable, any excess therein must tend to produce its evil consequences. Weakness, languor and pain must certainly follow excessive sexual excitement. The more delicate the health and strength of the person, the more sensitive the nervous organism, the more rapidly and surely must the individual yield to the depression and exhaustion from such excess. The failing health of the person from this cause may scarcely

be noticed, but the pale and hollow cheek, the dull and staring eye, the indisposition to exertion, the wandering and vacant thought, the pain in the back and many other symptoms, all tell the fatal story. The husband, with his stronger physique, the bracing influence of his outdoor exercise, wonders that the woman he loves has lost the vivacity and vigor she possessed before marriage. Let him consider the sacrifice of nervous sensibility she makes as the partner in his intimate intercourse, and he may find the secret of her failing strength and life.

While the conveniences of marriage permit of excess and abuse as just indicated, it is true, in general, that marriage is a wholesome condition. Married men, as a class, live longer than the unmarried, and they are more free from some kinds of destructive diseases. Married women, notwithstanding the incidents of pregnancy and child-birth, are more healthy than the unmarried. This seeming favor toward the wedded is due, not alone to the quietude and regularity which marriage gives to the sexual organization, but to the salutary effects that come from the greater incentives to effort which are aroused in those who become heads of families. Having something to

work for and live for begets an energy which wards off weakness and illness. Added to these two favorable conditions of marriage are the many safeguards which a home, however humble it may be, affords for the protection of its inmates.

If an individual is in fair health, free from constitutional disease, and has no physical deformity that might prevent the privileges and duties of a married life, it is better, from both sanitary and moral reasons, that such a person shall be married. If those who are thus united are well mated, if they have reasonable regard for the laws of their physical being, if they exercise some measure of coolness and temperance in their passion and are faithful in their love of each other, there is good reason to hope that the issue of their marriage will be favorable; they may expect to find some happiness in their intimate association.

ILLICIT INTERCOURSE.

"Virtue is the health, the good habit, the beauty of the soul; vice is its disease, its bad habit, its deformity."

—*Plato.*

CONSIDERED upon strictly physiological grounds, there is no difference between the sexual union of persons who are married to each other and a similar connection between persons who do not sustain this relationship. But the social and moral interests of enlightened people decide that, while marriage is wholesome, illicit intercourse of the sexes is one of the grossest of evils.

However wrong promiscuous intercourse may be, and for whatever reason it may be evil, such sexual union is equally so to both of the parties engaged in it. The man who seeks the indulgence, who sues for the gratification of his passions, is as guilty of wrong and is as much degraded by the act as is she who yields to his inducements and shares the corruption with him; in truth, there are reasons for considering him the more

culpable, since he is usually the stronger of the two; he is the one who appears as the seducer, while her weakness and her necessity may to some extent excuse her.

Offspring may occur from illicit intercourse as it does from the married relation. If conception does occur from illicit union, the undesired result rests the more heavily upon the woman, for upon her comes the burden of pregnancy and the immediate care of the child after birth. The fact that offspring is not desired in illicit intercourse tends in such cases to lead to one of the most serious of evils—that of abortion, in which case the pregnant woman destroys by violence the life of the young being while it is yet a part of her own. Should the offspring of such intercourse be born, its innocent life is blasted by its disreputable birth; it is a child disowned by the man who brought it into being, and is a child having the best of reasons to be ashamed of its unworthy father. The paternity of offspring under such circumstances cannot excuse the man from the obligation which he owes to his own flesh and blood, nor justify his leaving the burden of its care to the unfortunate mother. The man who would attempt to rid himself of such responsibility

to his child and its welfare adds the grossest of cowardice and selfishness to a course already disreputable and unmanly.

A woman's choicest treasure is her virtue; in sacrificing her chastity she destroys the jewel of her crown; her purity is her strength and her protection. So forcibly does this view of woman's worth prevail in the enlightened world that it would be better for her to suffer unto death and render up her life in virtue than from any inducement whatever to enter upon a life of illicit intercourse. The sense of degradation which an unvirtuous life brings will, to a sensitive person, destroy all happiness, and tend even to destroy health and life as well.

Promiscuous sexual intercourse is attended with the constant danger of contracting malignant diseases. Syphilis, which is one of the most contagious, as it is one of the most loathsome of disorders, is spread by such intercourse, and, for this reason, it is a common disease among persons of unclean sexual habits. A man or a woman who steps aside for a single act of illicit indulgence with one of promiscuous habit is liable to contract this contagion. Other diseases, some of which are of such acute nature that they

produce destructive inflammation of the sexual organs, are of frequent occurrence with persons of promiscuous sexual association. Any one who gives way to his appetite for such union yields himself to a passion that will tend to take complete possession of his forces, bearing him into abusive indulgence, out of which he will get very little pleasure, but from which he will certainly receive depression, pain and weakness. Even under the best of treatment of one's self, the sexual organs and the passion which arises from their action will give more pain than comfort to the individual, and, seemingly, there is no other set of organs to which abusive treatment is more destructive. Irregularity of action, loss of control, weakness, pain and impotency are the undesirable and embarrassing consequences which follow abuse or excess.

SELF-ABUSE.

"Our acts become our habits; our habits form our character; our character determines our destiny."

HOWEVER injurious excessive intercourse of a natural kind may be, there is another form of sexual abuse which is much more destructive in its character. Children, especially boys, early find that the external sexual organs are sensitive to touch, and they learn by accident or by evil example that these parts may be excited by artificial means, in much the same manner as that produced by natural intercourse. If once begun, this practice of excitement soon becomes a powerful habit, which tends directly to arrest and demoralize the development of both the body and the mind. These habits are commonly known as "self-abuse," "the solitary sin," or "masturbation." By whatever name the practice is known, or by what means it is accomplished, the physician and the intelligent parent know that the habit of such abuse is one among the most

destructive vices to which any young person can become addicted.

The unnatural act begets an unhealthy and excited condition of the organs, so that the acts of abuse are liable to become more and more frequent and violent until serious conditions are produced. The effects of such a habit show themselves on the organism of the person in the pale skin, hollow cheek, sunken and staring eyes, gaping mouth, stooping body, nervousness, palpitation of the heart, weakness of the back, and pain in the sexual organs. The person becomes dull in mind, shuns the society of others, and seeks indulgence in secret. Such practices tend to arrest natural and manly development, and, by their injury to the sexual organization, they tend to unfit the adult for married life. In its worst forms, self-abuse is one of the chief causes of weak-mindedness and insanity. A large percentage of the hopelessly insane have been brought to their deplorable condition by self-abuse — a habit which they have indulged until they have lost all power of control and all sense of propriety or decency.

What can be done to prevent or cure such an evil? This is one of the most difficult questions

that can be asked, because of the peculiar nature of the evil and the force with which the habit binds its victims. Even if parents know of the existence of such a habit with a child, they will scarcely venture to try to arrest the practice. Harshness on their part, and the embarrassment of the child, tend to drive the young person into greater seclusion. The physician cannot reach the case, for medicine cannot arrest the practice. Apparently nothing but the person's own will can do anything to avoid the shamefulness and destruction caused by the habit. If the individual can be definitely informed and forcibly impressed concerning the evil consequences of his habit, that it must surely result in pain and weakness, that it destroys all hope of a vigorous manhood, he may, by the exercise of his manly nature, cease to commit these acts of violence to his own person, or, at least, may lessen their frequency. The sympathy and help of his parents can aid him in this. It is true, however, that, do whatever he will at restraint, moments of sexual excitement and desire will come which quite overpower his will. Coupled with this liability to form the habit of abuse is the natural tendency of the sexual organs to involuntary seminal emission, in which

case, without excitement, other than that which occurs through the impressions made in dreams — through sexual scenes — the sexual organs act almost as they do in cases of actual intercourse. The more vigorous the individual, the more rich and stimulating the food, the more exciting his associations, the more active are his sexual organs and the more disposed are they to involuntary discharge. This is not a matter for concern or alarm, yet, in some measure, it leads to the practice of abuse. However difficult it is to prevent or to remedy the practice of self-abuse, it is certainly wise in parents to be on their guard and to protect their children as far as possible from the formation of such a depraving habit. Such practices are frequently learned from the bad example and corrupt suggestion of evil associates.

The young person who is diligently and regularly engaged at some suitable work, or is interested in the pursuit of a course of study with his classes, or who spends his energies freely in vigorous sport with good companions, is much less disposed to sexual impropriety than is the lad who, from his idleness, is a prey to his own imaginations and suggestions, and who lacks wholesome means of direction for his physical energies.

A simple diet, with less of flesh and more of cooling fruits, tends less to produce sexual excitement than do stimulating drinks and rich viands. The constant association of a young person with virtuous companions, free social intercourse with parents and friends at home, the reading of good books, the presence of ladies and gentlemen, the healthful activity of pleasant games and sports, all direct the mind from base physical suggestions and tend to develop a healthy tone of mind and a strong sense of refinement, which will do more than anything else can do to quicken the formation of virtuous character.

On the other hand, evil associations, lewd companions, books of doubtful character, scenes of revelry and license, details of crime, are among the surest forces that can debauch the young mind, by establishing a tendency toward low and sensual thought and taste.

All the means that parents can employ, whether derived from wise parental influence in its general form or from intelligent physiological study—the regulation of diet, the influence of good amusement, providing suitable employment—all are needed in promoting the sexual direction of their children.

"KNOW THYSELF."

"The more a man becomes addicted to sensual pleasure, the more completely is he a slave. People may call him happy, but he pays his liberty for his delights, and sells himself for what he buys." —*Seneca.*

IT is easy to preach, but not always so easy to practice, however good advice may be. It would seem, however, that there can be no safer doctrine and course of conduct than that which is based on the study of self and the conscious effort of right self-direction. By reflection and observation, one may learn what his tendencies and habits are, and by proper effort he may do much toward establishing self-control rather than give reign to impulses. He can endeavor to divert himself from what is evidently wrong and injurious, and turn himself toward what is better and nobler. No other person can do this for him. Others may help or hinder, but it is only as he seizes hold of his own tendencies, and exerts himself consciously toward what is manly, that he can become better than he now is. Such effort tends to elevate; in the conscious effort to do better lie

the surest and richest source of pure enjoyment, and the most helpful and ennobling of moral forces. On the other hand, a downward course will ever derange, depress, dissatisfy and destroy. Aim upward and press onward; seek the society of the good; emulate the example of the persons who are admired and loved because of their excellent qualities of character. Speak more gently to associates; look upon the hopeful and cheerful side of life; turn away from anger, fault-finding and envy. Life presents infinite possibilities of personal attainment, free to every zealous soul.

Cultivate bodily health by persistent exercise in the open air, by moderation in eating and drinking, by cleanliness, by proper amount of sleep and recreation. Give the lungs full breath, and cherish fresh air and sunshine as the richest of vital gifts to man. Dress with regard to judgment rather than in obedience to fashion.

Regard the physical body as the delicate and beautiful instrument through which the soul acts, in which it dwells and upon whose vigor and heathfulness the spiritual part is dependent for its own vigor and health, upon which it depends for growth, for happiness and for power.

Know, too, that the most sensitive and responsive of all physical parts are the sexual organs. Keep these within proper control; use them as nature intends and good judgment dictates. One can no more afford to abuse the sexual function than he can afford to destroy the brain. Aim to live temperately, chastely, virtuously. Shun dissipation; cleave to a noble purpose.

THE IDEAL MAN.

"Do noble things, not dream them, all day along;
And so make life, death, and that vast forever,
One grand, sweet song."

—*Charles Kingsley.*

AS the plant turns unconsciously from darkness toward the light, so human ideality leads ever from that which is base toward that which is noble, from evil toward goodness, from the hideous toward the beautiful, from weakness toward power, and out of the happy combination of strength and beauty forms an idol of worship.

In the ideal man these two factors rival each other for ascendency — his handsome personal appearance, his embodiment of force.

In form and size, the model type of Caucasian is tall rather than short; slender rather than broad; erect in body; lithe and quick of movement rather than gross; strong, not weak; muscular, not fatty. His shoulders are square and well thrown back; his chest is full; his abdomen is not prominent; his limbs are straight and tapering; his walk is firm; his carriage is manly and graceful.

In habits, such a man is clean in his person, temperate in eating and drinking, polite in his intercourse with others; he controls his temper, attends diligently to his own business, and is neither selfish nor "cheeky." His language is chaste and his conversation is free from vulgarity. He dresses well; he is interested in the important questions of the day; he is attentive to the opposite sex, and is regardful of their rights and privileges.

This ideal man marries, for he is a gallant and faithful lover; he has not destroyed his sexual vigor by evil practices, nor wasted it in sexual dissipation; he would not speak ill of any woman, much less would he descend to the unmanly plane of the seducer or debauchee.

He becomes the father of children, owns a home as the anchor of his affections; he accords to the mistress of his heart the equality of headship in his family. He fosters and educates his family; he is not unmindful of the poor, and aids in benevolent and sanitary measures.

Such a man fights no duels; he carries no concealed weapons; he seeks no quarrels; he keeps away from saloons; he is much at home; he pays his debts.

As a result, life, to him, is worth living: he has something worthy for which to live. He has developed his own powers, endowed his mind with imperishable riches and escaped the pains of ill health and the wreck of dissipation. He is idolized by his family, admired and honored by all who know him well, surrounded by steadfast friends, and deserves the reputation he has established of being a noble and upright man.

THE IDEAL WOMAN.

"May I reach
That purest heaven; be to other souls
The cup of strength in some great agony;
Enkindle generous ardor; feed pure love;
Beget the smiles that have no cruelty;
Be the sweet presence of a good diffused,
And in diffusion ever more intense.
So shall I join the choir invisible,
Whose music is the gladness of the world."

—*George Eliot.*

WOMAN differs from man because she is a woman, yet, all in all, she is his equal and his worthy helpmate. She is less coarse, less strong, but has more of beauty, and is more refined. While man may cope with physical forces, buffet the storm, fight battles, break the mountain, bridge the chasm, build the walls of a palace, she, as an artist, molds her opportunities to her purposes, creates fortune even out of accident or misfortune; by her command of unseen and subtle energies, she builds, beautifies and purifies the interior of the palace; she conserves the inestimable treasure of virtue.

In stature, she is slightly less than her companion. She is neither large and angular nor

diminutive and rotund. She is not powerful, yet she is strong. Her movements are agile and graceful. Her features are fairly regular. Her face is more oval than his. Her skin is soft; her hair is rich and glossy; her health gives glow to her cheek, fullness to her form, elasticity to her step and ease to the erect and commanding carriage of her person. Her chest is full, her waist undwarfed by artifice, and her voice is pure and rich.

Her dress is tidy, not showy; she displays but little jewelry, for her gems are of the mind and heart. She wins admiration by the engaging modesty and pleasantry of her manner, while she charms her friends by the brightness of her conversation and the evenness of her disposition.

She is not an idle person, for she is moved by a spirit of diligence and usefulness; she is not selfish, for she is mindful of the wants of others. She is social without being a gossip; she is interested in the acquisition of knowledge, yet she is not a recluse; she is well informed, but modest in its display; she is refined without being prudish.

If needful to do so, she can rely upon her own talent of hand or mind for making a living, and

can manage successfully the affairs of ordinary professional or commercial pursuit.

This ideal woman marries, for she loves deeply and faithfully. This fountain of her being is unpolluted by fickleness, design or treachery. Her love flows from her heart, not like the unruly torrent that would sweep and bend all before it, or dash itself against the rocks, to be itself whirled into eddies or splashed into spray, but like the deep, swift current which takes its way through the valley, moving the weaker impediments from its pathway, circling gracefully about such as are immovable, and pursues its unbroken course to the sea.

Such a love binds itself to its idol and its idol to itself; it fuses the two beings into an ideal unity. Such a love determines its own homage; it is its own protection — a love that lasts and is not easily broken.

This woman becomes a mother, for she is strong enough to bear the trial, and her inmost nature yearns to spend its treasures of love and service upon her own offspring. To do less would be unwomanly; to fail in this she would fall short of one great end and purpose of her life.

As wife and mother, she is queen of the home,

the molder of human happiness, the chief instrument in the Creator's hands for binding up broken places and for developing human perfection.

Blessed is her work. In doing it well she insures her own perfection; her children shall arise and bless her; her husband would lay down his life for her. Her opportunities are infinite, her duties are imperative, her crown is sure and fadeth not away.

PAINLESS CHILDBIRTH.

IT is proper that every possible means should be employed to prevent human suffering. To this end, the mother needs to be well informed in all that can determine the safe and easy labor she must undergo in bringing her child into the world. Fortunate is she who passes through this climax in her maternity speedily and with no great strain upon her nervous system.

To give birth to a child is a good and blessed act, not an evil one; under favorable conditions it is an issue to be desired, not shunned. Unfortunate is the woman who does not at some time in her life realize this crowning fruitfulness of her existence; deeply to be pitied is she if prevented from so doing by debility, disease or deformity. Painful as childbirth may be, helpless as an infant is, troublesome as is the growing child, expensive as are the years of maintenance at the parents' hands, deep as the anxiety of the mother often is for a wayward son or daughter, ungrateful as children sometimes are for the long

years of parental care they have received, it still remains true that a childless home is dreary and lonesome, that the heart which hears no echo of love from its own child is inexpressibly sad, and that a life without posterity is barren. Surely a duty so momentous should be a healthy one; certainly such an important behest of nature should be reasonably free from danger to the life of the mother, and free, too, from unnecessary suffering in its performance. In truth, there is nothing in human life more nearly holy than motherhood, and no other achievement can outweigh that of giving life to a human being.

It seems that the exercise of this function, within reasonable limits, is essential to woman's best health, to her longest life, to her greatest happiness and to the fullest development of her noblest traits. From vital statistics it is ascertained that married women are healthier than the unmarried; that of women between twenty and forty-five years of age, more single than married die; that of women who are suicides during this fruitful period of life, two-thirds to three-fourths are single; that of women who become insane within this limit of years, three-fourths to four-fifths are unmarried, and that in the path of strict celibacy lie a host

of peculiar mental and physical ills that are appalling in number and fatality.

It is a notable fact that among the most of savage and uncivilized peoples neither pregnancy nor childbirth itself interrupts the usual movements of the mother, excepting for a few hours, at most, at the time of the birth. The pregnant savage mother holds her place on foot in the shifting scenes of the roving tribe, stopping by the wayside to accomplish the trial of maternity, and, with the newly born papoose as her load, regains her membership among her people; or, it may be, she maintains her seat upon her pony, until the hour of birth is fully come, and, after a short time for its accomplishment, returns to the jolting motion of her palfrey and proceeds upon her way. Such ease and quickness of birth, though common among the unenlightened races, seem almost incredible to those who are accustomed to the pain and distress attendant upon such acts among the higher races. What is so easy because of the simple, healthful, natural life of the savage mother, has become a serious trial to the more feebly constituted woman of luxurious and artificial life, bringing to the latter, as is often the case, days and weeks of suffering, hours of intense

agony in its final act, followed by a period of exhaustion and endangered life.

It is an equally notable fact that among enlightened peoples thousands of cases are known to physicians in which children are born so speedily, when the hour comes, that there is not time to send for the doctor; other cases in which the act occurs so readily that it is accomplished before his arrival; still others in which the operation comes upon the mother almost without warning in her daily rounds of work or travel, so that the railway station or steam-car becomes her temporary hospital, and her fellow travelers are witnesses of the arrival of the new guest. Still others there are in which the child is born suddenly in bed, and, in some rare cases, it has occurred during the unconsciousness of the mother's sleep, from which she was aroused to find a "new one" under the covers. Often and often are the children of enlightened women born without pain or prolonged distress. All of such cases as the foregoing are due to the favorable mode of the mother's life, to her robust organization, to her good health, or to some special course of training or preparation which she has undergone.

Herein is suggested the most general means of preventing painful and distressing maternity, that is, by such agencies as are found in the entire previous life of the woman, dating back to and including the development of her womanhood through the formative periods of childhood and girlhood. From her very first years of life she is preparing for maternity, and all that can contribute toward making her strong, healthy, vigorous, well-developed, sensible and well-informed will assist in determining for her a naturally easy birth of her children. To secure this necessary development of the young woman is the province of her sensible mother, whose watchful care and wise guardianship must decide the daughter's course of physical life.

This favorable development, however, is not a condition that can be acquired within a short time; it is rather the result of slow but sure growth through years of right living. The promotion of such culture requires that the person shall live much in the open air and take such an amount of regular exercise as will develop muscular strength and nervous endurance. This can be done only by continued and persistent activity, in which the person does enough, but not

too much, and causes such exercise to become as much a relish to her as vigorous sport is to a stout boy. Almost every kind of ordinary business and recreation will assist in this good work of building a strong body. As has been said before, the clothing should be loose and light, yet protective against cold and wet. Coupled indispensably with this health-giving out-door life is the absolute need of full and regular hours of sleep in open, airy rooms; so, too, the need of enough plain, wholesome food, without the hurtful use of rich pastry, strong spices and heating and exciting drinks, such as tea and coffee.

Perhaps most of all does the building of a vigorous organization require the development of the proper form of the body and the full growth of all its vital parts, the most important of which are contained in the chest and abdomen. If these portions, which have more to do with maternity than have any other parts, are hindered in their natural growth, are deformed, displaced or dwarfed, the evil consequences, in the same degree, are hurtful and fatal. The tight dress-waist and unyielding corset are instruments of pain and death to the child-bearing powers of the woman who distorts her body by their use.

The natural and robust waist is not slender; fashion and false taste may require it to be pinched and dwarfed, but the unerring wisdom of nature has made the chest full and the waist and abdomen soft and yielding, because it is in these regions that the great vital organs are lodged, and freedom to grow and to perform their important functions is an absolute necessity to the fullest vigor of life. If the dress is kept even moderately tight about the waist these vital portions cannot and will not grow as they should. It is also true that the cramping of the chest into less than the natural limits crowds the contents of the abdomen down, causing unnatural prominence of this portion and making such pressure upon the sexual organs within the pelvis as to displace and deform those parts which are specially engaged in gestation. If the girl would grow to be a strong woman she must stand erect, keep her shoulders well thrown back, permit her chest and waist to become full and strong, and pursue such an active life as shall establish a vigorous endurance. A weak, frail girl-life, if continued, cannot fail to lead to similar weakness of woman-life and distressing frailty in motherhood.

Much can be done, by regular physical training, in the preparation of the mother for her trial, even after marriage, and as pregnancy approaches or as it progresses. The athlete, when he is to make a trial of his strength, undergoes a preparatory course of training by which he brings himself up to his highest powers. So, also, may a woman, by a proper course of regular open-air exercise, bring herself up in tone of nerve and muscle and greatly improve her powers of endurance. If she has entered upon her term of pregnancy, more should be done than ever to preserve her good health by continuing the usual round of engaging occupation and of interesting recreation. This is desirable for both the mother and the child and affects favorably her mental as well as her physical condition, preserving and improving her ability to pass successfully through the childbirth hours. On the other hand, excessive effeminacy tends to produce weakness, indolence wastes energy, yielding to helplessness begets greater helplessness, habitual reclining cultivates lassitude, life in the close atmosphere and overheated air within doors is enervating, morbid fear of pain invites pain: all such weakness, if permitted to establish itself, paves the way for

inefficiency and distress when the final hours come. Exercise should be continued, with proper precaution, to the last. During the eighth and ninth months she should walk less, ride more, lie down some each day, yet maintain to the end a gentle, active life of busy cheerfulness, avoiding fatigue, sudden jolt, hurtful strain and distressing positions. By such means she may come to the last hour with a fund of strength and power of endurance that are the best possible preparation for speedy and easy childbirth.

As a special course of preparation for easy and painless birth, the mother may do much by giving extreme care to the matter of her diet during pregnancy. The child is formed from her blood, and this, in turn, from her food. Thus it is that through the food she eats she may to some extent determine the growth of her offspring. It has been well determined that a rigid adherence to a fruit-diet, after the first two or three months of pregnancy, will aid very greatly in rendering the birth easy. One of the benefits from such a course of diet is its total relief of the tendency to constipation on the part of the mother. Another is, that, while fruits furnish abundant nourishment for the growing child, they do not abound

in bone-making substances; hence the bony parts of the child remain soft and yielding. The great difficulty in childbirth is the passage of the large, hard bones of the child through the narrow passages of the pelvis. By avoiding such food as tends to harden the bones, they will remain sufficiently soft to yield to the pressure made upon them and in this way pass readily. Very many cases have occurred illustrating this favorable effect of a fruit-diet. If the mother seeks an easy birth in this way she should deny herself wheat, oats and corn in any of their forms, because they contain bone-hardening elements. She should not use milk or hard (lime) water. She may eat liberally of all kinds of fruit, all kinds of vegetables, of rice, sage, tapioca, and the flesh of young animals. Persistent and faithful adherence to such a course of diet as is here indicated will undoubtedly result happily to the mother when the supreme moments of trial come.

There remains to be considered one sovereign means of painless childbirth, one so specific and direct that there is no doubt as to its result. This one method is the use of chloroform, as an anæsthetic for allaying the pain at the time of the birth. In the hands of the competent and skill-

ful physician there is no danger attending its use, and the effects are such that it turns pain into pleasure, or, if used in sufficient quantity, it renders the mother wholly unconscious of the ordeal through which she is passing. While this agent is harmless in the hands and under the direction of the careful physician, it is dangerous in the extreme if employed and administered by others. The physician must be the judge as to when and to what degree to use the anæsthetic. If the mother is robust and the birth is likely to be speedy, and is attended with but slight distress, there would be no occasion for its use; but in those cases in which the reverse is true, its use is demanded. By its influence, not only are the pains relieved, but the voluntary muscles are relaxed and the rigidness of the parts removed, so that birth is greatly facilitated. Careful physicians wait until labor has set in thoroughly with the mother, then use the chloroform only to the extent of affecting the voluntary muscles and the sensory nerves, and thus not to interfere with the action of the involuntary muscles by which the child is born. Under such management, the labor may go on naturally, though the mother be wholly unconscious of the act.

There are other anæsthetics which can be used at this critical period, but none which seem so safe, and at the same time so effectual, as chloroform. Thousands of doctors now use this anæsthetic generally and constantly in their practice without evil or fatal results. In painful childbirth, as in every other case of extreme suffering, it is a beautiful and blessed thing. It is the duty of the physician to relieve pain. He is too brutal to be employed to take charge of a delicate and sensitive woman in her trial of maternity if he can relieve her suffering but will not; he is altogether too ignorant for such important professional duty if he does not know how to do it. In this enlightened age there is no need of hours of agony in childbirth; it is too late to let the ignorance and prejudices of the past prevent the skillful avoidance of such suffering. Of course precautions are necessary, and haste and recklessness have no place at the bedside of childbirth. These precautions are known to the competent doctor and are safe in his management. Fortunate is the woman who has at her bedside an educated, capable and sympathetic physician, to whose care she can entrust her own life and that of her offspring.

A THEORY AS TO THE SEX OF OFFSPRING.

TO know what decides the sex of offspring is of peculiar interest. The subject presents much that is of scientific importance, since it is so closely connected with the origin of life and the influence of environment, while parents desire to learn what regulates the sex of their children, and to ascertain if these determining conditions are such as lie within parental control.

Many theories have been advanced in times past which have proposed to explain the intricacies of sex-origin. None, however, have fully solved the problem, while the most of these theories have been so wholly wanting in a reliable basis of careful observation as not to entitle them to any serious consideration. More recent investigations have proved less unsatisfactory, and, by reason of trustworthy and comprehensive research, have approached much more closely to definite answers to the interesting queries which arise concerning the genesis of sex.

Undoubtedly there are certain natural causes,

operating in obedience to immutable vital laws, which decide the sex of offspring. In the human being, as in all of the higher classes of animals, this decision is reached at such an early period in the development of the embryo that observations for ascertaining the causes and conditions which make the young being become male or female are especially difficult. In some of the lower orders of animal life, the development of the sex is delayed until a much later date in the life of the embryo, and, in certain of these cases, the decision as to the maleness or femaleness is not established until the animal has lived for a considerable time as a separate individual. For these reasons, observations for ascertaining the causes for the difference in sex are much more simple and satisfactory in the lower beings of the vital scale than among the higher classes of animals, in which, as has been said, the conditions are intricate and the operations are obscured by their early occurrence in embryonic life.

The higher animals do not appear to be in any way exceptional in the operations of the laws which govern their existence, and in accordance with which they have their development. All animate creation, including every phase of such

being, lives, grows and reproduces its kind in obedience to the same general vital laws. So true is this that there is every reason to suppose that the causes and conditions which operate in the lower orders of animals in producing differences in the sex of offspring act in the same general manner in producing like differences of sex in the offspring of higher animals, including the human being. By observations made upon the inferior animals, it is possible to discover certain tendencies in sex-determination. These tendencies may be traced with similar results into the superior orders, and serve to indicate the relations of cause and effect to be watched for and recognized in sex decision, even in the human family. It is from such study and experimentation, such careful observation and inference, that the most trustworthy explanations have been produced of the origin and determination of sex.

It is proper, however, to state that, while much is now definitely known in this regard, the whole has not been ascertained. What has been fairly ascertained to be true does not place the matter of the control of the sex of offspring within the easy command of parents; it does establish the

fact, nevertheless, that the regulation of sex is within their partial control, at least.

As ought to be supposed, the production of the two conditions, male and female — on which difference in individuals the continuance of life depends — is, in great measure, self-regulating, based upon such economic laws of supply and demand in nature as are in accord with the utility of sex and the welfare of the race. Evidently, nature must maintain a reasonable balance between the sexes. If from any cause the tendency were to produce males in excess, other causes must counteract such a tendency by the production of females, and, in like manner, any excess of females must be offset by corresponding tendencies to produce males. Such appears to be the case. It would be disastrous if the individuals of either sex were largely to outnumber those of the opposite sex, and it would be absolutely fatal for either sex to cease to be produced. It will be found, therefore, that the regulation of sex is a matter of such concern that its decision is not left to the whim, caprice or carelessness of the parent, but is founded so deep in the conditions and interests of life that it is quite beyond human agency to alter, even

in individual cases. It is possible, however, to recognize the general laws which tend to regulate sex, and possible, also, by conformity to their operations, to realize a desired result through their natural agency.

Each individual among higher animals, whether male or female, begins as an impregnated ovum in the mother's body. Any such ovum contains elements of constitution from both of its parents. In the earliest existence of this impregnated ovum, there is a season of sexual indifference, or indecision, in which the embryo is both male and female, having the characteristic rudiments of each sex, only indifferently manifested. In this stage, the embryo is susceptible of being influenced by external conditions to develop more strongly in the one or the other direction and thus become distinctly and permanently male or female. It is evident that this is the season in the development of the individual in which influencing conditions and causes must operate in deciding its sex, although it is possible in some of the lower animals to alter the tendency of sex in the embryo from one sex to the other, even after it has been quite definitely determined.

It is well established, in fact, that differences

in sex do not come from a difference in the ova themselves; that is, there is not one kind of ova from the female which become female, while other ova become male, for it is possible to alter the tendency toward the one sex or the other after the ovum has been fertilized and the embryo has begun its career of development. This possible change in sex tendency in the embryo also proves that sex is not decided by a difference in the spermatozoa; that is, some of the sperm cells from the father are not male, while others are female, in their constitution.

It is incorrect to suppose, as has been held by some theorists, that one testicle gives rise to male sperms and the other to female sperm cells, for both male and female offspring have been produced from the same male parent after one testicle or the other has been removed. The same is true in cases in which either ovary has been removed from the mother; that is, male and female offspring are produced from mothers in whom either ovary has been removed. In like manner, the sex of offspring is shown not to be materially affected by the comparative vigor of the parents; thus a stronger father than mother does not necessarily produce one sex to the exclusion

of the other. These negative decisions are important because they simplify the solution of the problem of sex-determination, by excluding, more or less fully, various causes which have been supposed to operate quite forciby in deciding the sex of offspring.

Some of the more positive agencies that enter into the determination of sex are found (1) in the influence of nutrition upon the embryo during its indifferent stage of sexual development, and (2) in the constitution and general condition of the mother before and during the early stages of pregnancy. These two factors appear to enter more fully than any others into the decision of the sex of offspring, and deserve the greatest consideration in this treatise. The influence of food in supplying the embryo with nourishment for its development is, perhaps, the most potent of these determining causes.

The effects of nutrition are shown in suggestive manner in some of the lower orders of animal life, in which the conditions and results are readily observed. The classes of animals most satisfactory for experiment in this connection are such as pass through different phases of individual life before reaching the highest and most fully de-

veloped stage. The insects afford an illustration of these differing stages of individual development: (1) the egg is perfected and deposited by the fly; (2) this egg hatches into a grub or worm-like animal; (3) this grub, when fully grown, enters the chrysalis form and undergoes such complete re-organization that it comes forth as (4) the perfect fly. Here are four complete and distinct stages, during which periods the sexual function and development are more or less delayed until the preparation of the insect for its fourth stage, and the tendencies toward one sex or the other may be repeatedly changed from one to the other during the earlier stages of the individual, by the influence of more or less favorable vital conditions. Frogs present another series of changes, which make them a favorite means of experimentation; thus the frog perfects and deposits (1) the spawn; this spawn hatches into (2) the tadpole, which, after a season of development and life as a tadpole, gradually becomes transformed into the highest phase of the individual's life, (3) the frog. Here are three forms of life in the same animal, quite distinct from one another, each being preparatory to the next in the scale. Complete sexual function is necessary only in the highest or frog stage,

and during the tadpole stage sexual development is more or less indifferent, the tendency during the life and growth of the tadpole to become distinctly and permanently either male or female being dependent in great measure on surrounding circumstances, especially so upon the influence of food, whether it be abundant and nutritious or the reverse.

Experiments upon frogs and insects tend to establish the truth of the doctrine that abundant nourishment during the stage of sexual indifference inclines to produce femaleness, while want of proper nutrition during these formative or preparatory stages inclines to produce maleness in the individual. Some of the most significant experiments for testing the influence of food in deciding sex are those made upon tadpoles. A notable case is described by Prof. Geddes,* from the experiments of E. Yung, in which, he says, "from the experience and carefulness of the observer, these striking results are entitled to great weight."

It appears that, in this remarkable experiment, of three hundred tadpoles, when left to themselves, the ratio of females to males was as 57 to 43.

The Evolution of Sex, by Professor Patrick Geddes and J. Arthur Thomson; Messrs. Scribner & Welford, New York.

These were divided into three lots of 100 each and fed upon different kinds of nutritious diet to ascertain the change in sex-tendency due to such food. It should be remembered in this connection that the tadpole represents the stage of sexual indifference in the life of the young frog, and that external conditions may alter sex-tendencies during such period of sexual instability. The first set, in which the original ratio of femaleness to maleness was 54 to 46, were fed abundantly on beef, from which cause the ratio altered so that it became 78 females to 22 males. The second portion, in which the ratio of sex in the beginning was 61 females to 39 males, were fed upon fish, by whose more nutritive effects the ratio was raised to 81 females to 19 males. The third section, in which the ratio of sex stood 56 females to 44 males, were fed upon a still more nutritious diet, that of frogs, whereby the proportion of females was elevated to the astonishing ratio of 92 females to 8 males. Each feature of this experiment is suggestive in indicating that a rich diet, abundant nutrition, favorable conditions for life, during the season of sexual indifference in the embryo, tend to develop femaleness. In the above experiment, no less than two out of the

three of all the tadpoles which were at first male in their tendencies became female.

Another of the most interesting and suggestive examples of the effect of diet in deciding the sex of an embryo is presented in the case of bees. In keeping with other insects, the bee develops through different stages of individual life. The eggs are formed and deposited by the mother-bee; these hatch into larvæ, which, by proper growth, development and transformation, become bees. Three kinds of bees, the queen, the workers and the drones, are produced from the larvæ; they exist together as the related members of the colony, and perform the various duties of the swarm within the hive. The queen is the perfect female, the only one of all the number capable of being the mother of a generation of offspring. She is the largest and most fully developed, and, by reason of her larger size, her finer appearance, and her superiority in other respects, is fitly recognized as the queen. The workers are the small, active bees, through whose diligence and sagacity the honey is collected, the comb is fashioned, the young are fed and the colony is protected from dangerous intruders. These workers are imperfect females, incapable of producing eggs. The drones

are the male bees; they originate from unfertilized eggs of the queen, and perform no other function in the life of the colony than that of fertilizing the ova of the queen. They live a comparatively short and inactive life, and, having performed their special sexual function, they are stung to death by the workers and thrown out of the hive.

The facts of greatest interest in regard to this curiously organized colony, or family, are such as concern the differences between the queen, whose motherhood is complete, and the imperfect female workers. The queen bee is produced from a fertilized egg which is deposited in a cell sufficiently large to admit of the superior growth of the larva which hatches from it; this larva is fed with "royal diet." This "royal diet" consists of the most nutritious and stimulating bee-food, gathered and preserved for this special purpose of serving as the nourishment for the baby queen. By reason of these more favorable conditions of room and food, the larva becomes perfected in its development so that it finally becomes the queen in size, appearance and function. The workers are produced in like manner from fertilized eggs, but the larvæ from these eggs are restricted to smaller

cells for their growth, and limited to the ordinary bee-food. The result is they are dwarfed in size, and, though female insects, they are incapable of performing the crowning function of the female — they produce no eggs.

Now, it so happens at times that some of the larvæ, which would otherwise become workers, receive by accident crumbs of "royal diet," and such is the effect of this richer food upon the larvæ which receive it that they grow to an extra size, and may even become fertile workers. Certain it is, too, that the nurse-bees often select larvæ which would otherwise become the dwarfed female workers, and feed these larvæ fully upon the "royal diet." By such means, these well-fed larvæ become young queens. Thus it is that "royal diet" determines that a larva, fed upon such food, shall become a queen, fully endowed with motherhood, while the larva nourished by the ordinary bee-food produces a sterile worker.

In this case it appears that fully developed femaleness is due wholly to the effect of an abundance of suitable food and other favoring conditions during the season of sexual indifference which exists in the larva, and that the fate of the female embryo, whether it shall become a queen or a

worker, is determined within the first few days of its larval life, by the effects of the kind and degree of nourishment it receives.

This is in exact accord with the results of the experiment already described in regard to the effect of food in determining the sex of frogs, and tends quite forcibly and conclusively to establish the principle that favorable conditions of food and opportunities for growth tend to produce the high degree of development in the embryo which results in a female offspring. It is fair, too, to infer that femaleness, with its wonderful capacity for maternity, is a higher phase of development, due to and determined by superior conditions of embryonic life.

What is here given in regard to bees is true in the same sense with other kinds of insects. Thus caterpillars which are poorly fed before entering the phase of the chrysalis come forth as male butterflies, while such as are abundantly fed, and which enter the chrysalis in a high state of development, become female butterflies.

In the higher animals, the mammals, in which class the human being is included, the embryo is retained within the mother's body until it has developed into a being like herself and is ready to

be born alive and be nourished by her milk. The changes in its growth, corresponding to the different stages through which the insect and frog pass, are performed in the hidden conditions of her body; hence, it is not possible to observe so definitely the effects of favorable or unfavorable vital conditions in determining the sex of offspring from the mammal. Following the indications derived from experiments with the lower animals in which it is convenient to watch the effects of certain external causes, it is possible to observe with a fair degree of certainty the influence of food, temperature, shelter, comfort and quietude, in deciding the sex of the young of the upper divisions of the vital scale. Results of interesting character are reported from experiments made upon sheep and other mammals.

A collection of three hundred ewes was divided into two lots, of one hundred and fifty each. The first division were extremely well-fed, and were attended by young rams; as a result, the sex of the lambs produced was in the ratio of 60 females to 40 males. The second division were sparingly fed and were associated with old rams, in which case the ratio of sex of offspring was 40 females to 60 males. It was also a noticeable fact that

the heavier ewes, such as showed fuller development and the happier effects of favorable conditions of life, produced chiefly female offspring.

Other experiments of similar kind made upon domestic animals tend also to establish the conclusion that with the superior animals, as well as with the inferior orders, favorable conditions of life for the mother, as regards food, shelter, temperature, quietude and contentment, tend to produce femaleness in her offspring, and that reverse conditions tend to produce maleness.

In order to produce offspring, a mother must be properly developed in sexual function. Undoubtedly, female parents make a more serious productive sacrifice in bearing young than is required of male parents. To be capable of such sacrifice as is demanded of the mother, and thereby be fully female, requires a higher degree of vital development of the embryo and offspring that is to become a female. In order to establish its sex as a female, correspondingly superior conditions for development are necessary during the formative period in which its sex is decided. In this connection, the female appears as the superior organism, complete in its own endowment for individual life and capable of reproducing its kind,

needing at most only the fertilizing element from the male, and, in many of the lower orders of life, not even requiring a fertilizing germ, but fully competent of itself to produce its young. "Royal diet" for the larva of the bee determines the complete motherhood of the queen-bee. The best external conditions for the embryo frogs decide the greatest ratio of femaleness in adult frogs. The most favorable conditions of ewes during the season of conception and early pregnancy beget the largest number of female lambs. In general, it is reasonable to infer that the higher sexual organization which constitutes the female is to be attained in the greatest number of cases by embryos which have superior vital conditions during the formative sexual period.

Among human beings, some facts of general observation become significant in the light of the foregoing inferences. After epidemics, after wars, after seasons of privation and distress, the tendency is toward a majority of male births. On the other hand, abundant crops, low prices, peace, contentment and prosperity tend to increase the number of females born. Mothers in prosperous families usually have more girls; mothers in families of distress have more boys.

Large, well-fed, fully developed, healthy women, who are of contented and passive disposition, generally become mothers of families abounding in girls; mothers who are small or spare of flesh, who are poorly fed, restless, unhappy, overworked, exhausted by frequent child-bearing, or who are reduced by other causes which waste their vital energies, usually give birth to a greater number of boys.

As a general proposition, the foregoing facts and inferences tend to establish the truth of the doctrine with women, that, the more favorable the vital conditions of the mother during the period in which the sex of her offspring is being determined, the greater the ratio of females she will bear; the less favorable her vital conditions at such time, the greater will be her tendency to bear males.

That many apparent exceptions occur does not disprove the general tendency here maintained. Moreover, it is impossible to know in all cases what were the conditions of the mother's organism at the time in which her child was in its delicate balance between predominant femaleness or maleness; else many cases which seemingly disprove the proposition would be found to be

forcible illustrations of its truth. Still further, it is probable that other causes besides those here mentioned act with greater or less effect in determining the sex of offspring.

The doctrine herewith deduced that the female offspring is the more highly organized, though differing from notions current in the minds of some persons who are imbued with the idea that the male is the perfect type, is in accord with the plan of reproduction of vital bodies throughout the entire world of living beings. In the plant kingdom, that for which all other parts of the plant exist, that to which all other portions are subservient, is the pistil, or female organ of reproduction, a part which it is the crowning function of the plant to perfect, a part which is the most complex, most highly organized and most precious. In the lower orders of animals, the female organism usually shows its superiority in its greater size and fuller development, as well as in its capacity for producing young beings. The ability to reproduce perfect beings as offspring is of itself the strongest evidence of the superiority of the female. Among insects, birds and mammals, the female is usually of larger size, and, though often less attractive in appear-

ance and less demonstrative in habit, she is more passive in disposition, more complacent and happy in temper. While greater stature and greater muscular development often accompany the more pugnacious and restless spirit of the male, such differences do not necessarily argue that the male is the more highly organized or more nearly perfect. These differences, when they exist, are in great measure due to the fact that the animal is male, and, having less organic sacrifice to make in other respects, has more muscular development, which is increased by his more restless and unsatisfied constitution.

As has been said, the capability of producing offspring is a sufficient evidence of perfect organization in the mother, and shows, too, that she possesses a requisite surplus of vital energy and organic power to endow her child with life, both of body and soul. That woman possesses higher nervous sensibility is evidenced in her finer delicacy and refinement, in her acuteness to mental impression, and in her keener and surer moral sense. Man is less complex. He makes less sexual sacrifice. He is not compelled to hold in reserve a surplus energy sufficient to equip a new life with being. He has more to spend in his

own muscle, brain and brawn. He may, therefore, excel in strength, in stature and in intellectual attainment; but such features of excellence are not necessarily an evidence that his organism is more complex, more refined, more perfect than woman's. Greater muscular and intellectual power accord with the restless life of the male, and fit him for dominion over brute force, but such endowments pale in significance when contrasted with the exquisite sensibility of woman, whereby she is fitted for maternity, gifted with a creative art and power capable of making men and women. Woman's motherhood, whereby the race is continued and its higher destiny is evolved, caps and completes the exalted rank maintained by the female element throughout the entire scale of vital being.

MISCELLANY.

OFFENSIVE *Odor.*—Certain glands of the skin excrete matter which produces pungent and offensive odor. This is notably true of the glands in the axilla, or hollow, under the arm. More or less odor also rises from the skin of the feet and from the sexual organs. In some persons, these odors are so strong and so noticeable as to render their presence repulsive to sensitive associates. The one sovereign remedy for all such cases is perfect cleanliness of the parts from which the disagreeable smell arises. By this means, the secretion from the glands is removed before it has opportunity to decompose. Thus, by washing the arm-pits throughly every morning with mild soap and water, there will be no more odor from them during the day; so, also, the washing of the feet will prevent any offensiveness from them.

With some persons, the skin of the feet and that under the arms is so open that these parts sweat too freely, keeping the feet damp and wet-

ting the clothing under the arms. In such cases it is better to wash the parts in a mild acid. Thus a mixture of ten parts of water and one portion of vinegar may serve as a wash that will not only prevent the odor, but tend, also, to check the perspiration. Strong tea, such as is used for drinking, will be found to be still better in some cases. If these common remedies fail, a solution of tannic acid and water will relieve the tendency to perspire too freely. To wash the sexual organs frequently in cool water and dry them well afterwards will not only keep them clean and prevent offensive odor from them, but will, also, tend to strengthen them and prevent unpleasant irritation and excitement of them. Cleanliness is, at all times, one of the most healthful and pleasurable of conditions, while nothing can be more disgusting than a foul odor from an unclean body.

Constipation.—One of the most common causes of irritation in the abdomen and pelvic regions, causing bad odor to the skin and breath, producing sick-headache and forming offensive gases, is the retention of fœcal matter in the colon. The larger part of the intestine serves as a temporary reservoir for the excrement from the liver

and small intestines, from which this offensive matter should be regularly and frequently evacuated.

If, from any cause, the habit of frequent evacuation of the bowels is not practiced, the substance thus retained in the colon gives rise to foul gases which bloat the abdomen, the contents become hard and dry, so that their evacuation becomes painful and difficult, and, worst of all, the effete matter is partially absorbed by the blood, making the blood impure with the foulest of substances. From this impurity of the blood come dullness, sick-headache, coated tongue, fetid breath and bad taste in the mouth. In habitual cases of constipation, there frequently arise some of the most distressing conditions of the rectum, such as "piles" and chronic inflammation.

Whether the bowels remain regular in their operation, or not, depends greatly on the attention of the person to regular habit of evacuation. If the individual has regular times for such habit, as often as once or twice daily, and regards this habit with as much care as he does his eating, he will usually have no tendency to constipation.

The kind of food one eats affects the action of

the bowels decidedly. A diet of fruits, vegetables and grains tends to cause easy and frequent movement, so that any one who has the tendency to constipation may relieve the difficulty by eating liberally and regularly of such food. Some articles, such as crackers, dry bread, milk, cheese and tea, tend to produce a constipated condition. Much exercise tends to free and regular action of the bowels; sitting and lying tend to make the bowels less active.

Constipation of the bowels irritates the sexual organs, by pressing upon these sensitive parts. One who wishes to rest at night without disturbance, and who seeks to keep his sexual organs in healthful quietude, must relieve his body from the bloating irritation caused by constipation. So, also, does a full bladder irritate the sexual organs by pressing on them.

Medicine is wholly needless for relieving or preventing constipation. Regular habit, moderate exercise and a fruit and vegetable diet will, by intelligent care on the part of the person, do all that nature requires for such relief.

[THE END.]

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